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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,127	05/02/2001	Charles Anthony Dafft	A01043	5418

21898            7590            04/22/2003  
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[REDACTED] EXAMINER

PRICE, CARL D

[REDACTED] ART UNIT      [REDACTED] PAPER NUMBER

3743

DATE MAILED: 04/22/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Offic Action Summary</b>	<b>Application N .</b>	<b>Applicant(s)</b>
	09/847,127	DAFFT ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	CARL D. PRICE	3743

-- The MAILING DATE of this communication app ars on the cover sheet with the correspondence address --

#### Period f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 30 January 2003 and 07 February 2003.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 15-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 15-19 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Response to Arguments***

Applicant's arguments with respect to newly presented claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Original claims 1-14 have been canceled by applicant, in the response filed on 01-30-2003.

Applicant argues that the prior art of record does not show or disclose a process for flaring including the steps combusting a flare feed stream in conjunction with a flare where the flare feed stream is a flare gas blend having at a first and second gas stream where the blend has at least 3 mole % hydrogen, a heating value of about 10-275 Btu/scf and 70 w % or lower hydrocarbon concentration.

The prior art references of "Basis and Purpose Document on Specification For Hydrogen-fueled Flares" U.S. Environmental Protection Agency, Office of Air Radiation, Office of Air Planning Standards, Research Triangle Park, North Carolina 27711 (March 1998) (of record), herein after referred to as "Hydrogen-Fueled Flares", Vickery and Milfred et al are now relied on to address the claimed limitations of applicant's invention as now set forth in the newly presented claims 15-19.

Regarding the limitation that the blend has at least 3 mole % hydrogen, a heating value of about 10-275 Btu/scf and 70 w % or lower hydrocarbon concentration" (claim 15) and converting at least about 80% of the flare gas blend into carbon dioxide and water" (claim 19), applicant's attention is directed to M.P.E.P. 2144.05 reproduced herein below which discusses that it "is not inventive to discover the optimum or workable ranges by routine experimentation".

As set forth in the rejection of the claims below, it is the examiner's position that applicant has arrived at the claimed blend in order to achieve "optimal or workable ranges" merely through routine experimentation.

(M.P.E.P. 2144.05:

*Optimization Within Prior Art Conditions or Through Routine Experimentation*

A. Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be *prima facie* obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%). See also In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable there over because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

B. Only Result-Effective Variables Can Be Optimized

A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)

(prior art suggested proportional balancing to achieve desired results in the formation of an alloy.).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Hydrogen-Fueled Flares” (of record), alone, or in view of Vickery (newly cited) or Milfred et al. (newly cited).

“Hydrogen-Fueled Flares” discloses the invention substantially as set forth in the claims with possible exception to the hydrogen/waste gas blend having at least 3 mole % hydrogen, a heating value of about 10-275 Btu/scf and 70 w % or lower hydrocarbon concentration”, converting at least about 80% of the flare gas blend into carbon dioxide and water” and the first, or hydrogen stream being produced from a synthesis gas, or from ammonia disassociation.

“Hydrogen-Fueled Flares” discloses a process for flaring including the steps of combusting a flare feed stream in conjunction with a flare where the flare feed stream is a flare gas blend having at a first hydrogen and second hydrocarbon containing waste gas (volatile VOC

and HAP). “Hydrogen-Fueled Flares” states “Flares are commonly used in industry to safely combust VOC and volatile HAP.”. And, “Some organic emission streams can be flared without the need for supplemental fuel. However, the use of supplemental fuel such as natural gas to endure the complete combustion of emissions is common”. (section 2.1, page 2). “Hydrogen-Fueled Flares” also states (section 2.1, page 3) that “These existing flare provisions require that the waste gas being flared have a minimum heat content, which is specific to the flare head design, and maximum waste gas flow rate.”. And, “Hydrogen-Fueled Flares” further states (section 3.2, page 9) that “The specific goals of the test plan were (1) to quantify the stability envelope (minimum gas hydrogen content versus exit velocity for flame stability) for hydrogen/waste gas mixtures having hydrogen concentrations and velocities in the range of DuPont’s flares, …”.

Both Vickery and Milfred et al teach, from the same combustion field of endeavor as the “Hydrogen-Fueled Flares”, mixing, or blending, a quantity of hydrogen into a waste gas feed supply for the purpose completely incinerating industrial the waste gases (waste gases from reactors, ovens, into carbon dioxide and water. Vickery discloses (column 3, lines 30-36) blending reactor or oven waste gases with a co-incineration fuel gas selected gases “such as hydrogen, methane (natural gas), propane, etc.,”. Milfred et al teaches blending industrial gases (PAH, PCB, VOC) with a fuel gas selected gases “hydrogen”.

In regard to claims 15-19, for the purpose of converting a gaseous waste material to carbon dioxide and water, it would have been obvious to a person having ordinary skill in the art

to blend a mixture of hydrogen, natural gas or propane with a product waste gas stream prior to entering the Hydrogen-Fueled Flares", in view of the teachings of either Vickery or Milfred et al. In regard to claims 15-19, since the claimed amount of hydrogen, and amount of blended gas being converted to water and carbon dioxide, would depend on numerous design concerns such as the chemical composition of the gaseous waste, the size of the flare, the gas velocity, etc., to form a blend of hydrogen/waste gas having at least 3 mole % hydrogen, a heating value of about 10-275 Btu/scf and 70 w % or lower hydrocarbon concentration", converting at least about 80% of the flare gas blend into carbon dioxide and water" can be viewed as nothing more than a mere matter of choice in design absent the showing of any new or unexpected results produced therefrom over the prior art of record, or merely the optimum or workable ranges for a given flare arrangement determined by routine experimentation. In regard to claims 17 and 18, Official Notice is taken that it is known to produce hydrogen from synthesis gas and/or ammonia dissociation. Thus, in view of that which is well known, to form the first hydrogen stream being produced from a synthesis gas, or from ammonia dissociation, as a known source for the hydrogen gas, would have been obvious to a person having ordinary skill in the art of combustion.

### *Conclusion*

See the attached PTO FORM 892 for prior art made of record and not relied upon and considered pertinent to applicant's disclosure.

**THIS ACTION IS MADE FINAL**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***USPTO CONTACT INFORMATION***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARL D. PRICE whose telephone number is 703-308-1953. The examiner can normally be reached on Monday through Friday between 6:30am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 703-308-0101. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-1148/0858.



CARL D. PRICE  
Primary Examiner  
Art Unit 3743

cp  
April 14, 2003